TranScript System

Adobe Systems Incorporated

Reference and Installation Guide

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Preface

1 Contents of the Manual

This manual has four chapters.

Chapter 1, “Introduction” provides an overview of the TranScript™ software and the services it performs, explains how to get and license the software for your site, and lists other sources of information about TranScript and related topics. The TranScript package is made up of a group of programs that address specific functions. The chapter concludes with a brief, illustrated description of what each of these programs does.

Chapter 2, “The TranScript System,” gives more detailed information on each of the TranScript package’s constituent programs, describes how they relate to other printing software and printing functions, and concludes with a brief discussion of porting.

Chapter 3 “Installation Instructions,” tells you how to install TranScript source or SPARCstation™ platform binaries with particular attention to the variations among the most common types of UNIX environments.

Chapter 4, “Troubleshooting,” answers the most commonly asked questions about problems at Transcript installations.

Appendix A, “*man* Pages,” is the *man* pages for each of the constituent programs. Each *man* page provides a brief, technical description of the program and its functions in a format standard to UNIX.

2 Typographic Conventions

2.1 Program Elements

The names of files appear in *italics*. Note that because most UNIX commands are files, UNIX commands appear in Italics.

Fragments of C code appear in *Helvetica oblique.* This convention includes the options of UNIX commands where they are not in interactive examples. Extended examples of C code appear as Helvetica regular. Environmental variables appear in all caps.

PostScript® operators appear in **Helvetica bold.**

2.2 Interactive Examples

In examples of interactive sessions **`courier bold`** represents what the user types.

In examples of interactive sessions `courier medium` represents the systems' response and, in particular, `host%` represents the UNIX prompt.

Chapter 1

Introduction

1.1 Overview

The TranScript product is a suite of UNIX programs that give users access to state-of-the-art PostScript language printers. The TranScriptq package transforms UNIX documents and graphics files into PostScript format. The PostScript language is a device-independent programming language and print file formatter for describing the appearance of printed pages. PostScript documents combine text, graphics, line art, and scanned images for printing on raster devices. PostScript language files will print without modification on any PostScript printer.

Many UNIX software packages support the PostScript language, and hundreds of Macintosh, personal computer, and other applications generate PostScript language files.

The TranScript package includes translator filters for common UNIX document file formats like *troff*, *ditroff*, and *plot*. It also includes filters for line-printer listings, Diablo 630 print files, and Tektronix® 4014 files. TranScript software is fully integrated into both the BSD UNIX(4.2 or later) and System V (Release 2 and later) UNIX line printer spooling architectures, and includes the communications filters necessary to print job banner pages, do page accounting, and perform communication with a PostScript printer. The TranScript package also includes complete documentation and installation instructions, font metric information, and sample PostScript print files.

Release 4.0 of TranScript supports several communication interfaces besides the serial interface, which was supported in previous versions. These include ethernet for QMS™ printers, *capcomm* for LocalTalk users, ethernet for MiLAN™ users, and parallel interface for 386 users.

1.2 Availability and Licensing

TranScript software is available for both Berkeley BSD and AT&T™ System V UNIX systems. It has been successfully compiled and run on a wide variety of hardware supporting these systems, including NeXT™ systems, Sun workstations, and personal computers running UNIX. If you are interested in porting TranScript software, See “Porting” on page 20.

TranScript software is available as source code under license from Adobe Systems Incorporated. TranScript sources work with BSD and System V UNIX systems. The TranScript package consists of C programs, makefiles, Bourne shell scripts, and a few uses of *awk* and *sed*. Adobe also offers a binary version for SPARCstations. Binaries for other systems may be available from their vendors. For licensing, dealer, or OEM information, contact Adobe Systems.

1.3 Other Sources of Information

The PostScript language is the subject of several books by Adobe Systems published by Addison-Wesley. These books are available in many bookstores or from Adobe Systems.

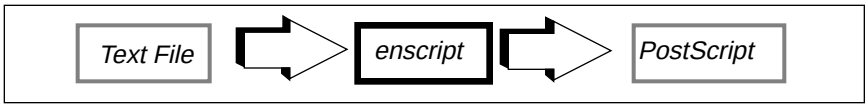
PostScript language and TranScript software are often topics on several USENET newsgroups. The groups comp.text, comp.text.desktop, comp.laser-printers, comp.periphs, comp.sys.mac, comp.sources.mac, and comp.lang.postscript may be of interest. Also, there are a number of mailing lists on government networks that are concerned with TranScript and PostScript software issues.

1.4 Program Summary

The following paragraphs briefly summarizes each of a suite of programs that make up the TranScript package, see Chapter 2,“The TranScript System”, for further details.

1.4.1 Filters

Figure 1.1 *enscript flow*

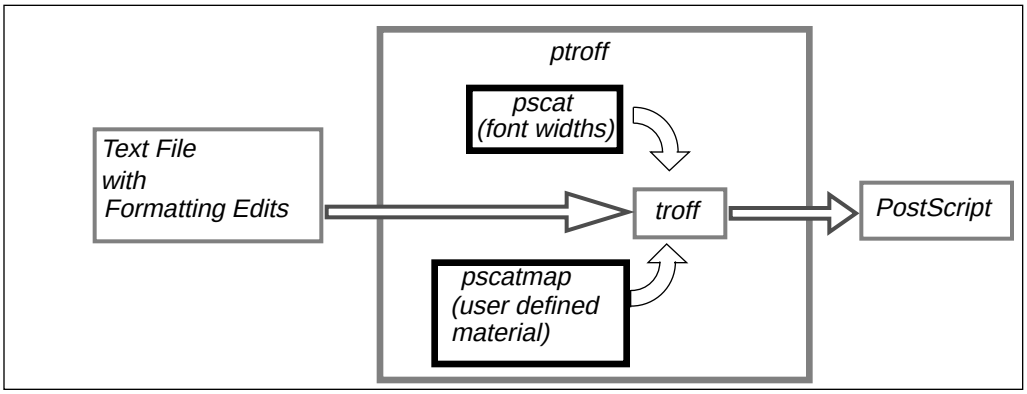


enscript sends a file to a PostScript printer. A variety of options in *enscript* let you control fonts, page sizes, page headings, rotation, multi-column printing, and so forth. Many installations use *enscript* more than any other interface to PostScript printers.

ptroff and *psroff* are shell scripts. *ptroff* runs *troff* and *pscat, psroff* runs *ditroff* and *psdit.*

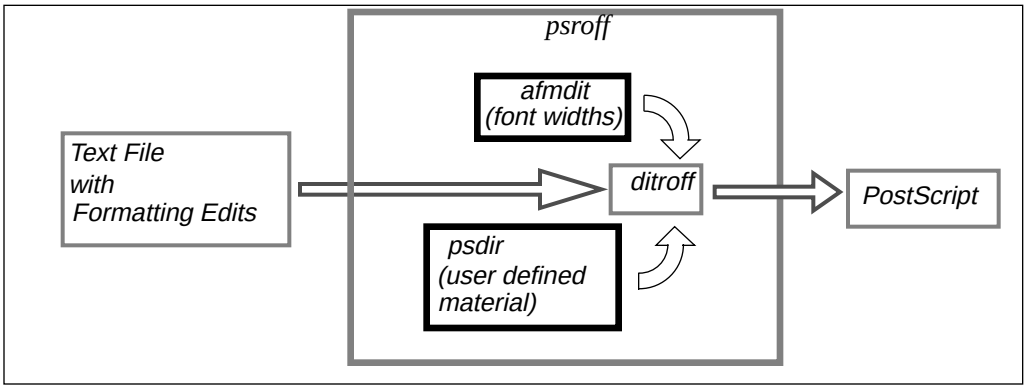
ditroff and *troff* are formatters commonly used with UNIX. Users mark text files with formatting codes, which these programs read and execute. *dpsdit* and *psroff* prepare the output of *troff* and *ditroff* for a laser printer.

Figure 1.2 *ptroff flow*



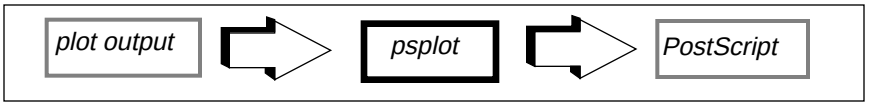
ptroff also converts *troff* output to a PostScript language file. It is a shell script that runs *pscat* and *troff*. *pscat* does the direct translation. *pscatmap*, which runs only at installation, allows you to substitute other sorts of characters and graphics for *troff* characters, in effect extending the flexibility of *troff*.

Figure 1.3 *psroff flow*



psroff similarly converts *ditroff* output to a PostScript language file. It is a shell script that runs two programs, *psdir* and ditroff. *psdit* does the direct translation. *amfdit*, which runs only at installation, allows you to substitute other sorts of characters and graphics for *troff* characters, in effect extending the flexibility of *ditroff*.

Figure 1.4 *psplot flow*

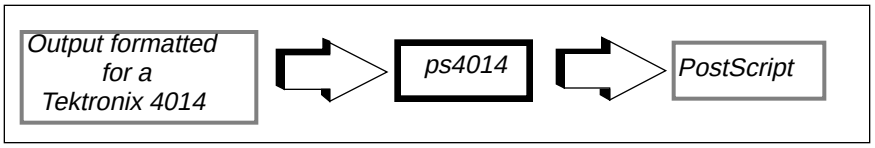


plot is a UNIX drawing program. You can type numbers into UNIX and plot the resulting figures on a terminal or other device. *psplot* translates that output in PostScript language files.

Figure 1.5 *ps630 flow*

ps630 converts output formatted for a Diablo 630, a once-popular daisy wheel printer, to PostScript language files. Several applications generate output in this format for fixed-width printing devices, including the *-Txerox* option to *nroff*.

Figure 1.6 *ps4014 flow*

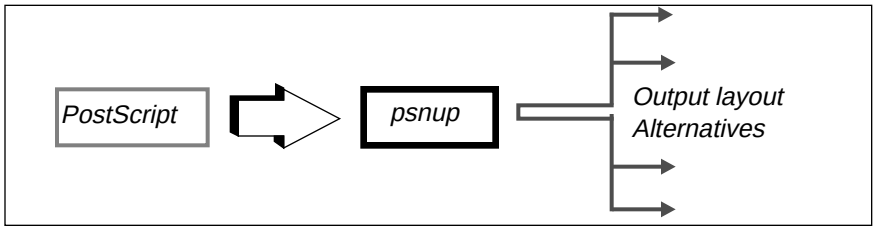


ps4014 converts Tektronix 4014 display files into PostScript language files. Tektronix 4014 format is a popular, vector-oriented (calligraphic) display representation, and many programs generate files for Tektronix 4014 display devices.

1.4.2 Page Management

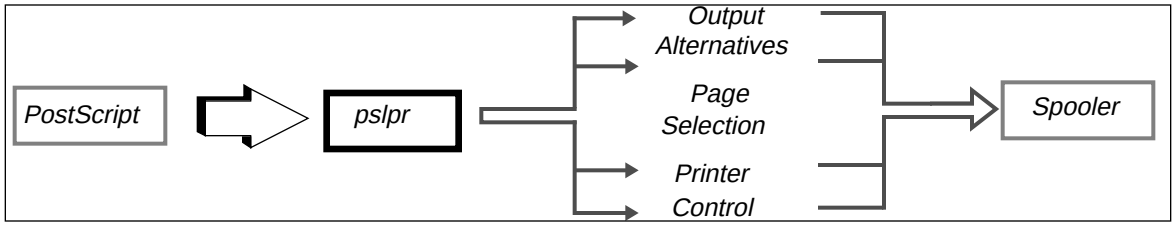
The TranScript package provides page management through five filters — *psnup, pslpr, psdman, psfax,* and *psdraft.*

Figure 1.7 *psnup flow*



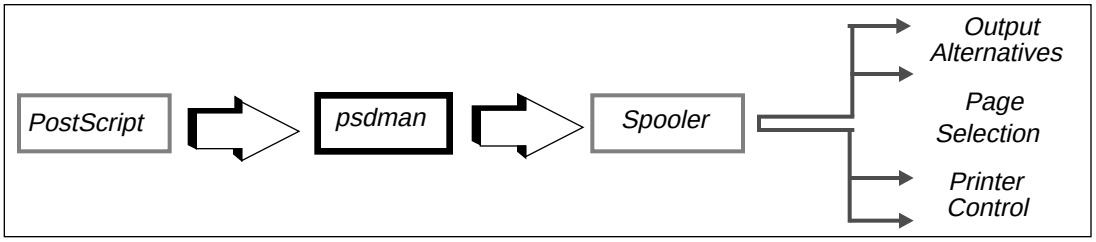
psnup is a filter that lets you print several pages on a sheet of paper, rotate pages, and select different page and paper sizes.

Figure 1.8 *pslpr flow*



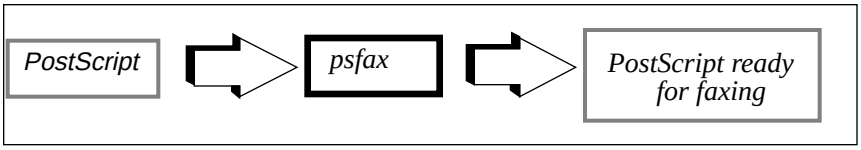
pslpr lets you reverse pages, print in landscape orientation, and select subsets of pages. You can also use it to download fonts and other resources and to activate printer-specific features.

Figure 1.9 *psdman flow*.



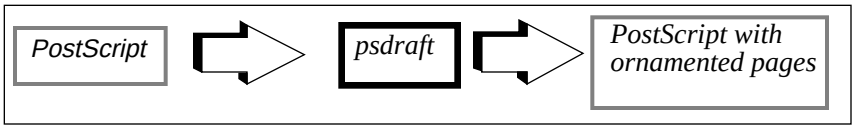
psdman provides much of the same functionality as *pslpr*, but on the other side of the spooler, where it is invoked automatically in the interface script.

Figure 1.10 *psfax flow*



psfax takes an existing PostScript language file and prepares it for a PostScript fax printer.

Figure 1.11 *psdraft flow*



psdraft takes an existing PostScript language file and allows the user to add strings such as “DRAFT” or “CONFIDENTIAL.”

Chapter 2

The TranScript System

2.1 Translation Filters

The TranScript package is a suite of UNIX programs that enable UNIX systems to access state-of-the-art PostScript printers. The following sections describe each program one by one.

2.1.1 Text Filters: enscript

One of the most useful parts of the TranScript package is a program called *enscript*. It prints text files with a multitude of options to control fonts, page sizes, page headings, rotation, multi-column printing, etc. The default action of *enscript* is to spool its output for printing. Many installations, use *enscript* more than any other interface to PostScript printers.

2.1.2 ditroff: psdit and psroff

The TranScript package also includes a translator for *ditroff* (Device Independent Troff). *ditroff* is sold and licensed independently by AT&T either alone or in a package known as the Documenter's Workbench™. In the Documentor's Workbench utilities, *ditroff* is known simply as *troff*. Adobe does not currently sublicense *ditroff* itself, but a *ditroff*-to-PostScript language translator is a part of the TranScript package.

ditroff allows more freedom and power than *troff* because it is free of some of the restrictions that were imposed by the obsolete C/A/T phototypesetter for which *troff* was long ago designed. Many more fonts may be referenced at one time in *ditroff*, and the notion of what character set is provided is more flexible. *ditroff* also provides some basic graphics facilities so that preprocessors like *pic* and *ideal* can work with it; they cannot work with the original *troff*.

psdit takes a *ditroff* output file and converts it a into PostScript program. Font metric information and the *ditroff* device description file for the PostScript printer "virtual device" are built automatically by shell and *awk* scripts included and documented in this release. The TranScript package comes with description entries for many PostScript font faces.

psroff is a shell script, which runs *ditroff*, *psdit*, and the line printer spooler in an environment to produce good output.

Some care must be taken when using *eqn*, *pic*, or *ideal* in conjunction with these TranScript filters. The versions of these three processors distributed with *ditroff* have various device types compiled in. (So much for device independence!) The PostScript language virtual device has a "resolution" of 576 units per inch and a minimum point size of 2. *eqn*, *pic*, and *ideal* should be modified to understand the *-Tpsc* flag and set their parameters accordingly. See the *psdit* and *psroff man* pages for more information.

Full installation of the *ditroff* utilities requires that you have *ditroff* (or Documenter's Workbench) at your site. In particular, creation of the font widths tables requires a program known as *makedev* in BSD UNIX, *devconfig* in the UCB-Gremlin package, and *mkdev* in AT&T System V UNIX. *mkdev* is missing from the 3B2 DWB package. Contact your AT&T service representative for more information.

psdit also allows the inclusion of arbitrary PostScript code into documents generated by *ditroff*. See the *psdit* man page for more information.

2.1.3 troff: pscat, pscatmap, and ptroff

Support for original *troff* comes in the form of three programs and associated font information. (In the Documenter's Workbench, original *troff* is known as *otroff*.) The TranScript package comes with font tables for a number of font families, including Times and Helvetica, which reside in ROM on all PostScript printers. In addition, the user can build new font mappings. For example, the user can assign through *troff* and *psat* Times-Roman, Times-Italic, and Helvetica-Bold in positions 1, 2, and 3. The user can also control character mappings and bind an arbitrary PostScript language procedure to a *troff* character code. Such binding lets you incorporate things like logotypes or scanned images into *troff* documents.

pscat takes *troff* output format files (which consist of control codes for a C/A/T phototypesetter) and converts them into PostScript programs. *pscatmap* builds font correspondence tables and *troff* width tables to be used by *troff* and *pscat*. The user can build a correspondence table, which associates an action with each character in the *troff* character set. The most common action is to print a character in a PostScript font. Other possible actions are to "fake" ligatures not present in a PostScript font, and to invoke an arbitrary PostScript language procedure of the user's creation. The TranScript package comes with correspondence tables already built for a number of font families. When *troff* is run, the proper font width tables must be loaded (and the proper font faces mounted) for the correct production of PostScript language documents. *pscat* must then be run with a

correspondence table for the font set that *troff* ran with. The user must forego the ability to use arbitrary *.fp* commands in a *troff* document; however, with a proper correspondence table, this constraint should not be a problem.

ptroff is a shell script that runs *troff, pscat*, and the spooler in an environment to produce good output, managing *.fp* commands and correspondence tables automatically.

2.1.4 plot Format: psplot

psplot filters the output of the UNIX *plot* command. *plot* format is documented in the *man* pages *plot*(5), and produced by *plot*(3), *plot*(1), and *graph*(1). The translation of *plot* format to PostScript programs is fairly straightforward. *plot* commands are translated almost one-for-one into PostScript language procedure calls. The binding decisions about what actually takes place are all present in the PostScript language prologue of the translated file. Thus, if the user is not content with the dashing pattern of lines, the size of text, or the scale of the final image, for example, a simple edit to the prologue can change the look of the printed page without the need to change the translation filter itself.

AT&T has removed *plot* format support from System V UNIX, but *psplot* is supplied with all TranScript systems.

2.1.5 Diablo 630: ps630

ps630 is a translator for Diablo 630 print files. The Diablo630 is a once popular daisy-wheel printer. This filter can be useful as a post-processor for applications that know about only fixed-pitch printing devices. For example, it can be used for printing files generated with the *-Txerox* option to *nroff*. In addition, programs like Scribe have the ability to generate Diablo print files. Note that some PostScript printers also have a built-in Diablo emulation mode. The translator allows a little more control of the printing process as well as capture of the PostScript language version of the document.

2.1.6 Tektronix 4014: ps4014

ps4014 converts Tektronix 4014 display files into PostScript programs for printing. Tektronix 4014 format is a popular, vector-oriented (calligraphic) display representation, and many programs have options to drive Tektronix 4014 display devices. *ps4014* allows these programs to produce hard copy on PostScript printers.

2.1.7 Page Management

The TranScript package provides page management through five filters, *psnup, pslpr, psdman, psfax,* and *psdraft.*

psnup is a filter that lets you print the reduced images of several pages on one sheet of paper, rotate pages, and select different page and paper sizes.

pslpr lets you reverse pages, print in landscape orientation, and select a subset of pages. You can also use it to download fonts and other resources, and activate printer-specific features, such as to insert the proper code for turning on manual feed for a particular printer. *pslpr* takes as input a PostScript language print file that conforms to the document structuring conventions. If the file does not conform to the conventions, *pslpr* will spool the file without providing any of the above services. *pslpr* uses the environment variable *PSRESOURCEPATH* to locate resources such as fonts.

psdman provides much of the same functionality as *pslpr*, but on the other side of the spooler, where it is invoked automatically in the interface script.

psfax takes an existing PostScript language file and prepares it for a PostScript language fax printer.

psdraft takes an existing PostScript language file and allows the user to add text strings such as “DRAFT” or “CONFIDENTIAL”

2.2 PostScript Language Files and Magic Numbers

The TranScript software determines if a spooled file is a PostScript language print file by examining the first few bytes of the input for the PostScript language magic number. If the file begins with %! (a percent sign and an exclamation mark) TranScript software assumes that the file is a PostScript program to be executed by the printer. Moreover, if the file begins with %!PS-Adobe-, TranScript software assumes that the file follows the Document Structuring Conventions(DSC), and that TranScript software can perform various document management functions requested by the user. If the file does not begin with the magic number, TranScript software assumes that the file is a text file to be printed, and formats it with the filter *enscript*. This convention must be used since sending a file that is not a PostScript language program to a PostScript printer will almost certainly produce undesired results. The PostScript language magic number and other comment conventions are explained more fully in the *PostScript Language Reference Manual* from Addison-Wesley.

2.3 UNIX System V Spooler Interface

The TranScript system works with the System V UNIX Release 2 or greater. The line printer spooling utilities are necessary for spooling and printing PostScript language files from a System V system. System administrators should familiarize themselves with the *man* pages *lp*(1), *lpstat*(1), *lpadmin*(1M), *lpsched*(1M), and related software.

2.3.1 psinterface

The System V *lp*/*lpsched* spooler allows printer interface programs to be specified for particular printers or printer-classes. *psinterface* is the top-level spooler interface invoked by *lpsched* to print on a PostScript printer. (It is the interface program presented to *lpadmin* when installing a PostScript printer.) *psinterface* is a shell script that is responsible for parsing spooler arguments, validating a print request, printing banner break pages, logging jobs, and, of course, printing. A particular instance of *psinterface* with the correct communications program in place is created and installed with the *mkprinter.sh shell* script described in Chapter 3, Installation Instructions.

psinterface invokes several other TranScript programs to accomplish its task: *psbanner* creates banner break pages, *psdman* formats (by means of *enscript*) files that do not begin with the PostScript language magic number, and performs various other document management functions, when requested, such as font downloading. *psinterface* invokes the appropriate communication program to perform actual communication with a PostScript printer as follows:

- F or a serial interface — *pscomm*
- For a parallel interface — *lpcomm*
- For QMS ethernet — *qmscomm*
- For FastPort™ ethernet — *fpcomm*
- For printers connected to LocalTalk® — *capcomm*

psinterface logs jobs in a separate file for each printer. This file also contains any stream or error output generated by the print jobs.

psinterface can be configured to vary its functions: banner pages may be printed before or after a print job (or both or neither), page reversal may be enabled or disabled (some PostScript printers do not require it, as they stack pages in the correct order).

psinterface recognizes three options specific to TranScript software by means of the *-o* switch to *lp*):

- *-h* suppresses the printing of banner pages
- *-r* forces page-reversal off
- *-m* sends the stream output of the job to be sent to the user by *mail*(1)

You can also set up the TranScript software so it is configured independently for each printer or communication interface in a network environment. You can set environmental variables (see below) in the file *SPOOLDIR/transcript/printer.opt* that affect the operation of *psinterface*. The *psinterface* script sets the initial value for each environmental variable. Note that *psinterface* and the *printer.opt* file both require Bourne shell syntax. Many of the variables take a numeric value, and specify whether an action should take place or not; 1 means do the action, and 0 means don't do it.

Table 1: Printer Environment Variables

Variable	Value	Effect
REVERSE	number	Reverse the page order
BANNERFIRST	number	Print banner at job start
BANNERLAST	number	Print banner a job end
BANNERPRO	filename	Banner prologue file
VERBOSELOG	number	Verbose log messages
PSTEMPDIR	directory name	Directory for temp files
PIPELINE	number	Set job flow

For example, to turn off page reversal for a particular printer add the following line to the *printer.opt* file:

REVERSE=0

Or change the banner page for a particular printer by redefining the BANNERPRO value.

You can increase speed at the cost of some reliability by setting *PIPELINE*=1 to tell *pscomm* not to wait for the end of one job before sending the next job. In the usual case (*PIPELINE=0*), *pscomm* sends a job to the printer, then waits until it gets a response back from the interpreter that the job is done before sending another job is sent. If you set *PIPELINE=1*, then *pscomm* will send the job, and not wait until the job is complete before going ahead and sending the next job. This strategy can result in more jobs being lost in case of printer failure.

2.3.2 Job Logging and Printer Status

psinterface logs jobs and reports status for each PostScript printer on a system. The file *SPOOLDIR/transcript/printer-log* contains job-by-job information about printers' activity. The log file contains error messages from the various spooling utilities, and is one of the first places to look if there is a problem with a printer. It also contains a record of all stream output

from the printer. Thus, if a user wishes to have the printer communicate information back to the host, output to the PostScript language stream %stdout (or from the PostScript language **print** operator) will appear in this file. Printer error conditions are logged here. Problems such as the printer being out of paper or a paper jam can be detected by examining the tail of the log file. Since the log file can get rather large, it is a good idea to rotate or truncate it on a regular basis. (At Adobe; we rotate the file daily, see *etc/daily.sysv* for a *crontab* template to perform the rotation.)

2.4 BSD Spooler Interface

The TranScript system works with the BSD UNIX line printer spooler. See the BSD document titled 4.2BSD (or 4.3BSD) Line Printer Spooler Manual by Ralph Campbell, and the UNIX *man* pages for *lpr*(1), *lpq*(1), *printcap*(5), *lpc*(8), and *lpd*(8) for more information. System administrators should familiarize themselves with these documents.

2.4.1 psint.sh

psint.sh is the top-level interface invoked by *lpd* for PostScript printers. *psint.sh* is a shell script that can be invoked under different names to perform different functions. File links allow *psint.sh* to be invoked as any of the allowable *printcap* filter types. These links, and associated *printcap* entries identify *psint.sh* as one of **ps{i,o,c,d,g,n,r,t,v}f**, representing the *if, of, cf, df, gf, nf, rf, tf,* and *vf printcap* filters respectively. Note that the following translators are absent from the TranScript system: *psvf, pscf, psdf*, and *psrf*. *psint.sh* will issue an error message when it encounters an unavailable translator type.

It is also possible to configure the behavior of TranScript software' for each printer or communication interface independently. *PSCOMM* governs the choice of interface. Edit its value to specify the path to a communications program. The *.options* file in the spooling directory can set environment variables that influence the operation of *psint.sh*. These are listed in Table 2. The *psint.sh* script sets the initial value for each. Note that *psint.sh* and the *.options* file both require Bourne shell syntax. Many of the variables take a numeric value, and specify whether an action should take place or not; 1 means do the action, and 0 means don't do it.

Table 2: Environmental Variables in psint.sh

Variable	Value	Function
REVERSE	number	Reverse the page order
BANNERFIRST	number	Print banner at start of job
BANNERLAST	number	Print banner at end of job, *see note*

Table 2: Environmental Variables in psint.sh

Variable	Value	Function
BANNERPRO	file name	Banner prologue file
VERBOSELOG	number	Print verbose log messages
PIPELINE	number	Don't wait for job completion to send the next job
PSCOMM	path name	Switch communication program

Note: Due to some problems with the design of lpd(8), there is no implementation of BANNERLAST that will work in all cases. We provide two options:

1) BANNERLAST=1. This prints out a banner between each copy in a multiple-copy job. It also may print out the previous user's banner on a job that has specified no banner (lpr -h).

2) BANNERLAST=2. This never prints a banner on a job that has specified no banner (lpr -h). However, it prints a banner after the first copy only in a multiple-copy job.

For example, you could turn off page reversal for a particular printer by adding this line to the *.options* file:

```
REVERSE=0
```

Or change the banner page for a particular printer by redefining the *BANNERPRO* value.

2.4.2 psif, pscomm, psdman

As the *if* filter *psint.sh* does basic printing. *psint.sh* invokes *psdman*, which uses the magic number rules described on page 10 to distinguish between text and PostScript language files. *psdman* will run *enscript* to format text files. *psdman* will page-reverse files as necessary, and perform other document management functions based on printer options and the file's magic number. The lowest-level filter, responsible for actual communication with the printer, error handling, status reporting, etc. is the communications filter.

2.4.3 psof, psbanner, banner.pro

As the *of* filter, *psint.sh* runs *psbanner*, which is responsible for formatting job banner break pages. psbanner creates a file containing the banner page, and *pscomm* actually prints it. *psbanner* knows how to deal only with the short banner format, so the *sb* printcap entry must be specified with no argument. The environment variables *BANNERFIRST* and *BANNERLAST*,

plus the *sh* *printcap* entry, determine exactly how the banner page is printed. If *sh* is specified in the *printcap* entry, no banner page will be printed for any job, and banner strings will not appear in the log file. If *sh* is not specified, then the values of *BANNERFIRST* and *BANNERLAST* are taken into account. These may be set independently and determine whether the banner page should be printed before and/or after the job. In either case, if *VERBOSELOG* is set, the banner string will appear in the log file before the job is sent. Any user can omit printing a banner page by specifying the *-h* option to *lpr* or *enscript*. Since banner pages take time, paper, and toner to print, you should decide whether they are important for your site. (At Adobe, we run with *sh* in the *printcap* file, and with *VERBOSELOG* on and *BANNERFIRST* and *BANNERLAST* off. This allows lots of information to appear in the printer log file without wasting resources for banner pages.) Note, that since the banner page is actually printed by *pscomm*, these pages will be charged in the accounting file.

The format of the banner page is specified by *BANNERPRO* in *psint.sh*. This takes as input the short banner string presented by the spooler to the *of* filter and formats a page displaying the information. If you want a different banner page design, you can achieve it by changing *BANNERPRO*.

2.4.4 psgf, psnf, pstf, psvf, psrf, psdf, pscf, psbad

psint.sh, like the other translation filters, sets up a pipeline between a translator program and *pscomm*. This allows the file format flags to *lpr* to work correctly, but, in all cases, much more functionality is provided by using the translators explicitly and spooling the generated PostScript language files. Note that when *lpr* does the translation, the burden of the format translation is placed on the printer spooler. The printer may have to wait without printing while the document translation takes place, thus reducing job throughput. It is far more advantageous to spool only PostScript language files, and place the burden of translation on user processes.

The translation filter entries may also specify that the translator is not available (e.g., a *cifplot* filter) by calling *psbad*. In this case they log an error message and print an error page.

2.4.5 Log Files, Printer Status, and Job Accounting

The *lf* entry in the *printcap* file specifies the printer log file. This file contains error messages from the various spooling utilities. (*lpd* will complain here if an output filter malfunctions.) The printer log file also contains a record of all stream output from the printer. Thus, if a user wishes to have the printer communicate information back to the host, output to the PostScript language stream %stdout (or from the PostScript language **print** operator) will appear

in this file. Printer error messages (e.g., out of paper) will also appear here. If *VERBOSELOG* is turned on (the default), job banner strings and start and end markers will appear in the log file, helping to delimit other output.

The TranScript software will also communicate printer status, if available, using the *.status* file in the printer spooling directory. The contents of this file are printed by a *lpq* or *lpc* status request. When TranScript software detects a printer error (e.g., out of paper, paper jam), a message to that effect will appear in the *.status* file.

If a proper *af* entry is present in the *printcap* file, *pscomm* will perform job page accounting if the driver in use supports two-way communication. The *qmscomm* driver and the *lpcomm* driver do not support accounting or logging. The *qmscomm* driver does not support status. We suggest running with accounting on, if only to give you a better idea of printer usage and to help keep track of total pages printed.

Since the log file and the accounting file can get rather large, it is a good idea to rotate the log file and summarize the accounting data regularly. (At Adobe, we do it daily; see *etc/daily.bsd* for a template to do this.)

2.5 Downloadable Resources and PostScript Printer Description Files

The TranScript 4.0 system lets you dynamically download resources to PostScript printers. Dynamic downloading works in conjunction with PostScript Printer Description (PPD) files. Downloadable resources and PPD files are described in the following two sections

2.5.1 Downloadable Resources

Dynamically downloadable resources include fonts, procsets, forms, patterns, files, or encoding vectors. The TranScript system will also support other, user-definable resources. This feature is available only for conforming PostScript language documents. A conforming PostScript language document is one which begins with `%!PS-Adobe-1.0` or greater and abides by the rules of the Document Structuring Conventions (DSC). Version 1.0 of the DSC was described in the original version of the *PostScript Language Reference Manual* (the original “red book”); Version 3.0 is described in the second edition of the *PostScript Language Reference Manual*, and is also available from the Adobe mail server (see page 19).

For a conforming document, either *pslpr* or *psdman* will parse the comments in the document, determine what resources or printer-specific features are necessary, and insert the appropriate PostScript code.

The TranScript software locates resources for downloading by looking through a list of colon-separated directories, which are specified at installation (see Chapter 3, Installation Instructions). By default, resources are sought in these directories. The user may specify an environment variable, *PSRESOURCEPATH*, which will override the default. The default can be included in the path defined by *PSRESOURCEPATH* by specifying "::" in it, as in */user/lib/fonts:/user/lib/procs::*. *pslpr* will use the user's *PSRESOURCEPATH*. Because *psdman* does not run as the user, it uses the default and never the environment variable.

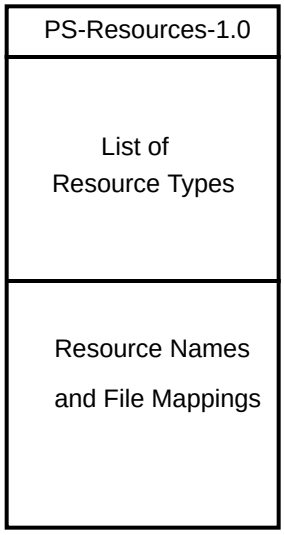
In each directory specified in either the default or in *PSRESOURCEPATH*, there should be at least one file with a *.upr* extension. This file should provide a mapping from resource name to file name. In addition to the resources mentioned above, this location mechanism is also used for Adobe Font Manager (AFM) files. The TranScript release contains a *.upr* file for all the AFM files that are part of the release. Additional AFM file mappings can be added to it.

The format of a *.upr* file is as follows:

The first line should contain **PS-Resources-1.0.**

The next lines contain a list of resource types, one per line. The built-in resource types of interest to TranScript system users are *FontOutline*, *FontAFM*, *ProcSet*, *Form*, *Pattern*, and *Encoding*. The list of resource types is terminated by a period (.) on a line by itself.

Figure 2.1 *.upr file format*



After this, for each resource type named in the list, and in the order that they are named in the list, is a listing of the resource names of that type and their file mappings. Each is terminated by a period (.) on a line by itself. A line beginning with % is treated as a comment.

For example:

```
PS-Resources-1.0
% Sample upr file.
FontOutline
FontAFM
ProcSet
FontOutline
Courier-Bold=CourBold.font
.
FontAFM
Courier=Courier.afm
Courier-Bold=CourBold.afm
.
```

```
 ProcSet
MyProcSet=myprocs.ps
.
```

2.5.2 PostScript Printer Description Files

The TranScript software relies on PostScript Printer Description (PPD) files to determine features and capabilities of a given printer, including which fonts are available on a printer. PPD files are used to describe the state of a given printer, including the availability of features such as manual feed. PPD files are available from the Adobe mail server, see page 19. The PPD files from the mail server describe the printer as it comes from the manufacturer. If you make changes to the defaults, or download additional fonts outside the server loop, or have a hard disk with additional fonts, you need to customize the PPD file.

We suggest you customize the PPD file by creating a new PPD file with just your customizations in it, and then to use the **Include* mechanism to include the original PPD file. That is, create a file, and insert the line:

**Include: "filename"*

where *filename* is the name of the original PPD file.

If *filename* begins with a slash, it will be treated as an absolute pathname, otherwise the path will be relative to *PPDDIR*. Any other customization should go above this line. The first occurrence of a keyword rules, so your customizations should appear first. If you have a hard disk with extra fonts, or download extra fonts, there is a PostScript program in *etc/extrafonts.ps* that will enumerate all the fonts available, along with the encoding and version information, in the format specified in PPD files. This program can take as long as 30 minutes to run if you have a lot of fonts (1000).

Various TranScript programs use PPD files, so they should be widely available and readable by all. PPD files should be named *printername.ppd*, and should be in the directory specified by *PPDDIR* in *config*. If your file system is limited to 14-character file names, and your printer name is longer than 10 characters, just use the first 10 characters of the printer name in constructing the filename. It's a good idea to use the include mechanism everywhere and to include the original to avoid mistakes. Includes also save space if many printers are the same type. A description of the details of the PPD file format is available on the Adobe mail server. Most people will be able to use the PPD files as they are; however, if you download fonts outside the server loop, you should reflect that in the PPD file. If you change defaults, such as the default paper size, you must make corresponding changes in the PPD file.

2.5.3 Adobe Mail Server

The Adobe mail server provides useful information, including documents that describe various formats, and sample PostScript language programs, including all the PostScript language code from *The PostScript Language Manual and Tutorial* (the Blue Book). The mail server also contains Adobe Font Manager (AFM) files for all Adobe fonts, PPD files for all Adobe PostScript language printers, Adobe press releases, and other items. You can reach the mail server by sending e-mail to ps-file-server@adobe.com; send mail with “help” in the message body to receive instructions on using the mail server and a description of the contents and operation of the mail server.

2.6 Downloadable Utilities

The TranScript release comes with a PostScript program, *ehandler.ps*, that can be downloaded (sent) to the printer. It is described below. *ehandler.ps* affects the printer in a way that lasts until the printer is rebooted or turned off and then on.

Note: Downloadable utilities must be downloaded again after the printer is rebooted.

At Adobe, this *ehandler.ps* is spooled by root to our printers once an hour through a process invoked by *cron*. See the hourly *cron* entry templates under *etc/* and see *cron*(8). Since the file is downloaded only once an hour, there will probably be some time after your printer reboots before the file takes effect again.

This PostScript program is permanent because it exits the server loop before making changes. This early exit requires that the printer password be incorporated into the file to be downloaded. If you change the printer password at your site, make sure you change the passwords in any PostScript programs that exit the server loop. Also, if your printer password is sensitive, don't forget to protect the downloaded files and spooling directory.

2.6.1 Error Page Printing

The file *lib/ehandler.ps* is a PostScript program that will modify the printer's behavior for PostScript language errors. The default action is to send an error message over the output channel and to abort the current job. The error message will appear in the log file. *ehandler.ps* causes the printer to print the current page with some space taken over to describe the error and dump the operand stack. It also sends the error message to the log file. Note that this file contains the LaserWriter server-loop password.

We recommend that you download the log file to all your printers, since it gives users a better idea of what happen when a PostScript language job fails. Although the errors appear in the log files in any case, many users won't think to look there.

2.7 Porting

Most TranScript modules are quite portable. The translation filters make fairly light use of UNIX system calls and use only common C library subroutines. The translation filters have no knowledge of the spooling or communication system for which they are generating files. The actual spooler communication interface programs are, of necessity, more system dependent. They make intimate use of terminal driver facilities, *ioctl's* and several other low-level UNIX system calls. They should serve as a good model as to how to implement communication with the printer. Anticipate about two person-weeks of effort to port the TranScript system to another variety of UNIX system.

The TranScript system does not provide its own spooler. Older UNIX systems without a general spooling architecture will face the problem of modifying an existing spooler for handling spooling requests and managing a queue, or writing a new one.

Please let us know if you succeed in porting TranScript software to another system. In particular, we like to know whether you are willing to share your experience with other TranScript customers. Also let us know if you have trouble porting the TranScript software that is related to the TranScript code itself. We are always looking to increase the portability of the TranScript system.

Chapter 3

Installation Instructions

3.1 The Contents of the TranScript Package

This section lists the parts of the TranScript product. If you find anything missing from the package, get in touch with Adobe customer support (see page 43).

3.1.1 Documentation

The TranScript 4.0 release includes of the following documents:

- The *TranScript System 4.0 Reference and Installation Guide* (this document)
- The *TranScript System 4.0 User Guide*
- The *TranScript System 4.0 Release Notes*

3.1.2 Magnetic Media

Files on the Source Release

The following directories and files are in the source release:

- *Notice* — Copyright notice
- *src/* — Sources for the programs that constitute the TranScript system
- *sh/* — Front end shell scripts for *troff* and *ditroff*
- *config.sys*, *printer.bsd*, and *printer.sysv* — Shell scripts to specify the TranScript configuration for your system
- *configure.sh* — Shell script to configure the TranScript installation for your host
- *buildprogs.sh* — Shell script to build TranScript programs

- *instlprogs.sh* — Shell script to install TranScript programs
- *buildmisc.sh* — Shell script to configure and install the printer interface script
- *instlmisc.sh* — Shell script to install library and font files
- *buildtroff.sh* — Shell script to build font width files for *troff*
- *builddit.sh* — Shell script to build font width files for *ditroff*
- *instltroff.sh* — Shell script to install font width files for *troff*
- *instldit.sh* — Shell script to install font width files for *ditroff*
- *mkprinter.sh* — Shell script to install the printer into the spooling system
- *rmprinter.sh* — Shell script to remove the printer
- *instlman.sh* — Shell script to install TranScript *man* pages
- *adddit.sh* — Shell script to create additional font width files
- *addtroff.sh* — Shell script to create additional font width files
- *lib/* — Font information, PostScript language prologue templates
- *etc/* — UNIX system file information.
- *man/* — UNIX *man* pages
- *doc/* — Additional documentation, including this document in the form of a PostScript language file
- *test*/ — Some sample PostScript programs
- *ppd/* — PostScript Printer Description (PPD) files for several printer models
- *psfig/* — Source for *psfig*, a *ditroff* preprocessor

Files on the Binary Release

The following directories and files are in the binary release:

- *Notice* — Copyright notice
- *progs/* — program binaries

- *sh/* — Front end shell scripts for *troff* and *ditroff*
- *config.sys*, *printer.bsd*, and *printer.sysv* — Shell scripts to specify the TranScript configuration for your system
- *buildprogs.sh* — Shell script to build TranScript programs
- *instllbin.sh* — Shell script to install TranScript programs
- *builddit.sh* — Shell script to build font width files for *ditroff*
- *installtroff.sh* — Shell script to install font width files for *troff*
- *instldit.sh* — Shell script to install font width files for *ditroff*
- *mkprinter.sh* — Shell script to install the printer into the spooling system
- *rmprinter.sh* — Shell script to remove the printer
- *adddit.sh* — Shell script to create additional font width files
- *addtroff.sh* — Shell script to create additional font width files
- *lib/* — Font information, PostScript language prologue templates
- *troff*/ — Width files for prebuilt fonts
- *etc/* — UNIX system file information.
- *man/* — UNIX *man* pages
- *doc/* — Additional documentation, including this document in the form of a PostScript language file
- *test*/ — Some sample PostScript programs
- *ppd/* — PostScript Printer Description (PPD) files for several printer models

3.2 Installing TranScript Source Files

This section guides you step by step through installing TranScript source files. It is fairly detailed and assumes that you have a working knowledge of UNIX system organization (e.g., the locations and contents of a few system files, of environmental variables, etc.). On almost all UNIX systems, installation of the TranScript package will require super-user (root) privileges.

Note: Please read these instructions carefully before installing TranScript software.

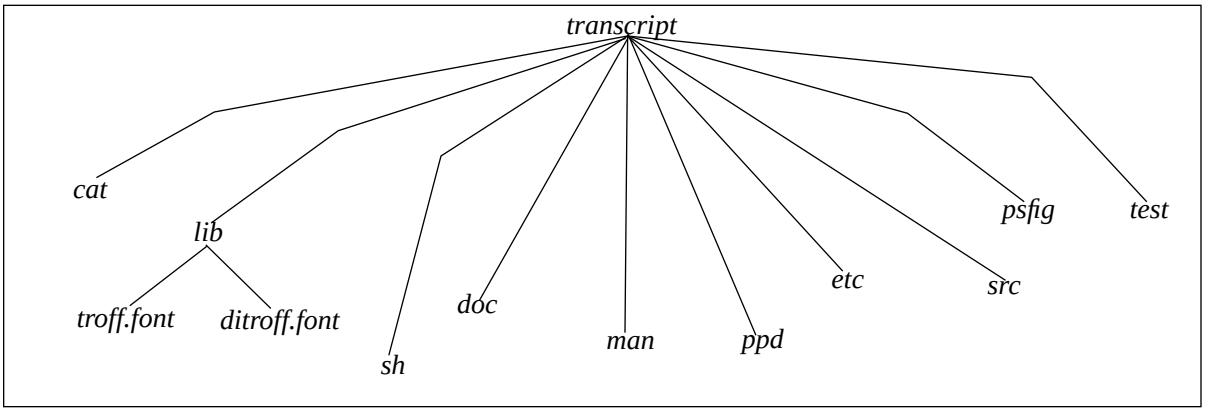
If you have no experience with the UNIX line printer spooling system (*lpr/lpd/printca*p on 4.3BSD systems, *lp/lpsche*d on System V), please take the time to read the documents and *man* pages for the spooling system.

On 4.3BSD systems, look at *lpr*(1), *lpq*(1), *lprm*(1), *printcap*(5), *lpc*(8), *lpd*(8), and *pac*(8) and 4.3BSD Line Printer Spooler Manual in volume 2C of the UNIX documentation.

On System V systems, look at *lp*(1), *lpstat*(1), *lpadmin*(1M), *lpsched*(1M), *accept*(1M), *enable*(1) and UNIX System V Line Printer Spooling Utilities.

When your installation is complete, the top levels should look like Figure 3.2.

Figure 3.2 *TranScript source directory tree*



3.2.1 Unloading and Defining the Configuration of a Source Release

Unload the contents of the distribution tape or diskettes. To unload, *cd* to a directory of your choice. Make sure the current directory (.) is on your search path. The TranScript release is in compressed *tar* form on floppy disks, and in *tar* format on other media. If your default *tar* device matches the TranScript release medium, then you should be able to unload the TranScript software merely by typing.

```
host% tar x
```

If your medium was a floppy disk this *tar* will produce a large, compressed file called *tranrel4.tar.Z*. If not it will produce an uncompressed file called *tranrel4.tar*. To uncompress the “Z” file:.

```
host% uncompress tranrel4.tar.Z
```

You will get a *tar* file called *tranrel4.tar* containing the TranScript software. In either case next type:

```
host% tar xvf tranrel4.tar
```

This command will create a master directory called *transcript* with subdirectories as shown in Figure 3.2 on page 24. The *-v* option of *tar* gives you a listing of all the TranScript files as they are untarred.

If you need more information on the use of *tar* or *uncompress*, refer to the UNIX *man* pages. (*uncompress* may be under *compress* in the *man* pages.)

To install the TranScript system, *cd* to the *transcript* directory. In this directory, copy the file *config.sys* to *config*, and either the file *printer.sysv* or the file *printer.bsd* to *printer*. Carefully examine the files *config* and *printer*, which are fully commented, and make appropriate modifications to them. These two files in the top-level directory determine where and how the TranScript software will be installed. The software, installation scripts, and *Makefiles* included in this release have been configured so that you can change where the files reside for installation. There should be enough information in those files to help you determine how you might want to change them.

The initial step in creating a configured version of the TranScript system is to create a directory structure in which to build the TranScript software, starting with the directory referred to by the environmental variable *BUILDDIR* in the file *config*. In the default distribution configuration of the TranScript system, the binaries users can execute and shell scripts go in */usr/local/bin*, the library files go in */usr/local/lib/ts*, and *man* pages go under */usr/local/man/man?*. On 4.3BSD systems, the spool directories are under */usr/spool* and the printer log and accounting files are in */usr/adm*. On System V systems, the log files go under */usr/spool/lp/transcript*.

If you decide you want to put the files in other locations, you must change the directory names when you edit the *config* and *printer* files.

Under 4.3BSD, another possibility is to change the file locations by using symbolic links. For example, if you want the actual files under */usr/local/lib/transcript*, use the following command:

```
host% ln -s /usr/local/lib/transcript /usr/local/lib/ts
```

Note: If the entire set of troff and ditroff fonts is installed, the font data bases will take up approximately 1.3 MB of disk space and 2700 hard links. Set FONTFAMILIES carefully. There is more information about how to estimate the disk space an installation will take in Installing Fonts on page 34.

3.2.2 Source Software Installation

Now configure and install the TranScript software. In the main transcript directory, you should have copied the file config.sys to config, edited the config file, and copied either printer.sysv or printer.bsd to printer, and edited printer. Now run:

```
host% configure.sh
```

This command will configure the TranScript software for your site and build the directory structures that are necessary for creating a configured version of the TranScript system. If this goes smoothly, assuming *BUILDDIR = builddir*, and it is just below your top-level *transcript* directory, you can then:

```
host% cd builddir
```

Then execute the script:

```
host% buildprogs.sh
```

This compiles and builds the TranScript programs. If the build goes smoothly, you should then become super-user (which is only necessary for the install scripts). Then execute the script:

```
host% instlprogs.sh
```

This installs the TranScript programs built by *buildprogs.sh* in the directories specified by *LIBDIR* and *BINDIR*, defined in the file *config*. Now run:

```
host% buildmisc.sh
```

This configures the appropriate printer interface script, called *psint.sysv* for System V and *psint.bsd* for BSD, by setting the value of some variables as defined in *config*. Then *buildmisc.sh* places the script into the directory defined by *BUILDDIR/lib*, where the script is called *psinterface* for System V and *psint.sh* for BSD. Next run:

```
host% instlmisc.sh
```

This command installs some *.AFM* (Adobe Font Metrics) files, prologues, and other auxiliary files in the directory defined by *PSLIBDIR* according to the definition in the *config* file, as noted above. For BSD UNIX, it also sets up the links for the printer spooler script

Note: The print panel on the TranScript graphic user interface must have a list of printers to display to the user. On BSD systems it just parses /etc/printcap, and extracts the printer names. On System V systems, however, there is no single list. One expedient solution is to put a list of printer names in PSLIBDIR/printer.list, one printer name per line.

If you aren't building *troff* and *ditroff,* you can skip the rest of this section of the installation and go to “Hardware Setup and Configuration”.

Note: The installation procedure for the ditroff (and Documenter's Workbench) font metrics files requires a program called makedev in BSD UNIX and mkdev in System V UNIX, which is normally part of the ditroff distribution. You should build ditroff only if you have this program.

Moreover, the Documenter's Workbench binary distribution for AT&T 3B2 computers does not contain the makedev program. (Contact your AT&T service representative to obtain a copy of the makedev program.)

To build font width files for use with *troff*, run:

```
host% buildtroff.sh
```

To install font width files for use with *troff*, run:

```
host% instltroff.sh
```

To build font width files for use with *ditroff*, run:

```
host% builddit.sh
```

To install font width files for use with *ditroff*, run:

```
host% instldit.sh
```

Installing man Pages

To install the *man* pages, you should have edited your *config* file to set the values that specify the directories where the *man* pages will be installed, and to establish the extensions to the names of the *man* page files. If you have done that, then *cd* to the directory you have specified for *BUILDDIR* and run the script:

```
host% instlman.sh
```

This script will install the TranScript *man* pages in the directories that you have specified.

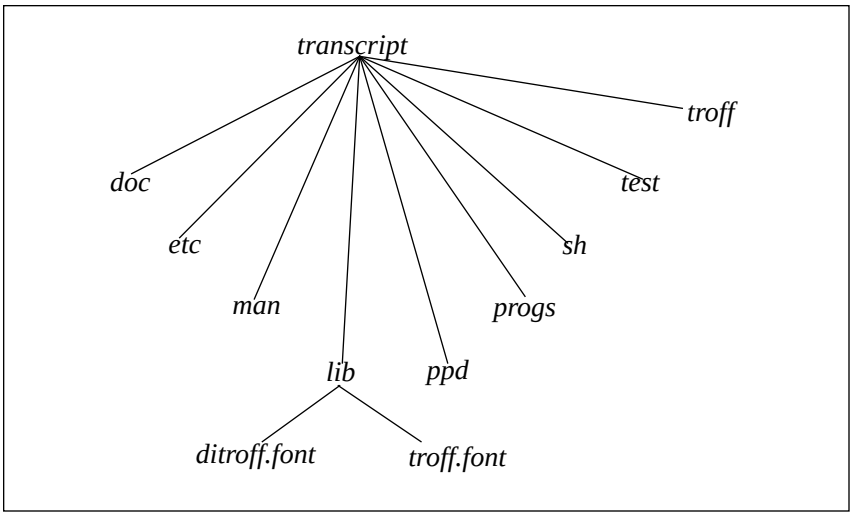
The TranScript software is now installed. The next step is to install a printer into the spooling system.

3.3 Unloading a Binary Release

Unload the contents of the distribution tape or diskettes. To unload, *cd* to a directory of your choice. Make sure the current directory (.) is on your search path. The TranScript release is in compressed *tar* form on two floppy disks.

When your installation is complete, the top level should look like Figure 3.3.

Figure 3.3 *TranScript binary file tree*



3.3.1 Unloading the Binary Release

If your medium is floppy disks, insert the first disk and type:

```
host% tar xvf /dev/fd0
```

This command will produce a large, compressed file called *disk1.tar.Z*. Uncompress it with:

```
host% uncompress disk1.tar.Z
```

then:

```
host% tar xvf disk1.tar.Z
```

Then insert the second disk and repeat the process:

```
host% tar xvf /dev/fd0
host% uncompress disk2.tar.Z
host% tar xvf disk2.tar.Z
```

The *tar xvf* command will create a master directory called *transcript*, with subdirectories as they appear in Figure 3.3. The *-v* option of *tar* gives you a listing of all the TranScript files as they are untarred.

If you need more information on the use of *tar* or *uncompress*, refer to the UNIX *man* pages. (*uncompress* may be under *compress* in the *man* pages.)

To install the TranScript system, *cd* to the *transcript* directory. In this directory, copy the file *config.sys* to *config*. Carefully examine the files *config* and *printer*, and make appropriate modifications to these files. These two files

in the top-level directory allow you to specify some parameters concerning the operation of TranScript software. There should be enough information in those files to help you determine how you might want to change them.

The installation of ditroff width files for the binary release is the same as for the source release (see, page 27).

3.3.2 Hardware Setup and Configuration

Different kinds of PostScript printers will have different communications interfaces and configuration needs. For the most detailed description pertaining to your printer, please check the documentation available from the manufacturer. For serial communication, pick a tty port on your host to connect to your printer and disable **getty** on that line. On 4.3BSD systems, this entails editing the file */etc/ttys* and doing a **`kill -HUP 1`**. On System V systems, use *sysadm ttymgmt* or edit */etc/inittab* and do a **`kill -1 1`**.

One of the most frequent problems in setting up a PostScript printer is getting the cabling right. The 25-pin connector on the printer has a “DTE” type RS232 interface. This means it can be connected directly to most hosts or modems with no signal reversals required. Connecting to a terminal requires interposing a “null modem,” a short length of cable you plug into the wiring, which reverses the Transmit Data and Receive Data signals.

Most PostScript printers do something when you turn them on, and most can print a power-on page, which displays their communications settings. Most printers support higher baud rates (e.g., 19200); you may wish to use that setting on those printers. Many printers can also support hardware DTR flow control; you may want to use DTR, which most UNIX systems support. See the documentation for the specific printer to determine its capabilities. In order to change any communications settings, you will need to change the spooling database for the printer. In BSD, edit *etc/printcap*; in System V: *stty* flags in the *mkprinter.sh* script. Then either change the settings on the front panel or download an appropriate PostScript language job to the printer to change the printer settings (see the *etc/setscc.ps* file as an example).

To communicate with a QMS printer by means of ethernet, make sure the printer’s name and IP address appear in the host database.

To communicate with parallel printer drivers you must specify the appropriate parallel device. In SCO UNIX it is */dev/lp1*.

Communication with MiLAN printer drivers is similar to communication with QMS drivers. Make sure the IP addresses and host names for your FastPort server are in the host data base. See the *man* page on *fpcomm* for more details on configuring *fpcomm*.

In a System V environment, *QMSFLAGS* in *config.sys* points to the libraries that should be linked in when compiling *qmscomm*. *qmscomm* uses sockets to communicate, so whatever libraries are necessary should be specified.

In SCO UNIX these are *-lsocke*t and *-lnlsl_s*.

In AIX these are *-ltli*.

Some machines running System V have incorporated BSD-style sockets, for example SGI machines. In that case, ignore this variable and set *BSDSOCK* in *config.sys* to true.

On some systems (SPARCstations and other Sun workstations, for example), if you want *fpcomm* to use *BIND* to resolve hostnames you must link it to the resolver library by setting *RESOLVLIB* in *config.sys* to *-lresolve*. On other systems, such as DecStations™, no extra library is necessary and *RESOLVLIB* should be set to blank, which is the default. If you don't want *BIND* to resolve hostnames, then leave *RESOLVLIB* set to blank.

Note to binary purchasers:Versions of fpcomm both with and without the resolver library built in are included. They are fpcomm and fpcom.resolv.

Printers on Apple® LocalTalk networks communicate through the *capcomm* program. *capcomm* uses the Columbia AppleTalk® Protocol (CAP) libraries. *capcomm* supports accounting.

The CAP libraries are not included in the TranScript software, but they are available on the Internet through anonymous FTP, currently from the sites listed in Table 3.1:

Table 3.1 *Current locations for FTP of CAP files*

Internet site	Location
rutgers.EDU	src/{cap60.tar.Z,cap60.patches/*}
munnari.OZ.AU	mac/{cap60.tar.Z,cap.patches/*}
gatekeeper.DEC.COM	pub/net/appletalk/cap/{cap60.tar.Z,cap.patches/*}
ftp.kuis.kyoto-u.AC.JP	net/cap/{cap60.tar.Z,cap60.patches/*.Z}
src.doc.ic.AC.UK	mac/multigate/{cap60.tar.Z,cap.patches/*}

Please choose an appropriate site and an off-peak time for the transfer.

The patches are available individually or as the files *patches.1-75.tar.Z, patches.76-100.tar.Z,* and *patches.101-125.tar.Z.* In addition, for new users, a partially patched source file is available as *cap60.pl100.tar.Z* (the file *cap60.tar.Z* is unpatched).

Machine-Specific Notes

SGI machines require extra libraries to compile X applications, beyond the normal *-lXm -lXt*, and *-lX11*. In *config.sys* set *SPECIALLIBS* to *-1PW*. See the comments in *config.sys* for more information on *SPECIALLIBS*.

The internal structure of AIX, which supports IBM workstations, is sufficiently different from standard UNIX in terms of system files and environmental variables that it is impossible to give detailed instructions here about these aspects of integration.

3.3.3 UNIX Spooler Configuration

Once the printer is cabled up, you must create the necessary UNIX system references to it. You can create most of them by running the *mkprinter.sh* shell script in the base directory of the TranScript release. Decide on a name for this printer. While your first PostScript printer might be called “ps”, or “qms”, or “lw”, or “dp”, plan for the day when you will have more than one PostScript printer available. On 4.3BSD systems, at least one PostScript printer at your site should have the alias “PostScript”, as some of the TranScript software will spool to this printer as the last-ditch default. On System V systems, at least one PostScript printer at your site should belong to a printer class named “PostScript” for the same reason. Make sure you have edited the top-level files *config* and *printer* as the values in these files are important for printer installation and are fully commented. Make sure you have specified the *SPOOLUSER* and *SPOOLGROUP* values for your site correctly in *printer*. At Adobe and many other 4.3BSD UNIX sites, these are both daemon, but the 4.3BSD spooler documentation talks about user daemon and group spooling. Check the owner and group membership of the program */usr/lib/lpd* and already existing printer spooling directories on your system to help find out what these should be. For System V systems, these are typically *lp* and *bin* respectively; check the owner and group of the directory */usr/spool/lp* and */usr/bin/lp*.

In the following examples the printer name is aleph.

If you have plugged the printer into a tty port *cd* to the *TranScript* directory, become super-user, and execute *mkprinter.sh* with the following arguments: printer name, tty port, and communication program. For example, if the tty port is tty11, the printer is aleph, and the communication program is *pscomm*, enter:

```
host% mkprinter.sh aleph tty11 pscomm
```

If you are communicating to a QMS printer through ethernet or a FastPort box, the printer's name and IP address must appear in the host database (either in */etc/hosts* or whatever host database you are using). In the *printcap* entry for the printer, most spooling systems require that either a remote

machine for spooling or a device be specified. You should not specify */dev/null*, but use instead */dev/printername*, which will be created automatically by *mkprinter.sh*.

The first argument is the name by which you want the printer to be known in all spooling requests, the second is the name of the device (under */dev*). The device may be in the tty port or in the parallel port or may be a dummy file in the case of printers connected to ethernet. In the case of serial or parallel interfaces, this command sets up a hard symbolic reference of the device to */dev/aleph*. Should you choose to move the printer to another tty port, you need only change the link and not the various files that reference the printer. The *mkprinter.sh* script also sets up the spooling directories, printer log files, and (on 4.3BSD) printer accounting files. It sets up the spool directory and the user id and group id for this directory by invoking the *printer* file.

For System V, *mkprinter.sh* then configures and establishes the printer interface script and the log directory. It invokes *lpadmin* to set up the printer interface specification, start the print queue, and enable the printer. It also searches */etc/inittab* for an entry for this device to remind you about removing any *getty/login* from that line.

For BSD UNIX, *mkprinter.sh* sets up the spooling, log, and accounting directories, and the *printcap* entry. The *mkprinter.sh* script will set the access permissions to be those necessary for the spooler to access the port. It will also search */etc/ttys* for an entry for this device to remind you about removing any *getty/login* from that line.

mkprinter.sh is a rather brave program and attempts to do a lot of operations at once. At the end of the script, it does an *ls* of the files and directories it has created.

On 4.3BSD systems, *mkprinter.sh* creates a *printcap* entry called *printcap.new* for use with this printer. The */etc/printcap* file (described in *printcap*(5)) has functional descriptions of all printers known to the 4.3BSD print spooler, including printers accessible over a network. The file *etc/printcap.proto* in this release contains a sample *printcap* entry for a PostScript printer run by TranScript software; *etc/printcap.notes* contains some comments about this entry, as well as a sample *printcap* entry for a remote networked printer. Examine the file *printcap.new*, which was created by *mkprinter.sh*, and install it in */etc/printcap* (usually just append it), when you are satisfied with the entries. On System V systems, *mkprinter.sh* will create and install a printer interface program for your printer. It runs the *lpshut*, *lpadmin*, and *lpsched* programs to install the spooler interface for your printer.

You will want to run *mkprinter.sh* for each PostScript printer you install on your system.

3.4 Interactive Use of a PostScript Printer

PostScript printers have a built-in interactive "executive" mode. This mode is often useful for setting persistent printer parameters. If your printer is on a serial connection, you can make use of various programs that offer interactive tools to communicate with your printer. On 4.3BSD systems, you can use the *tip* program to talk to a printer. You can add the following entry to your *tip* host tables (usually in */etc/remote*):

```
aleph:el=^C^D^S^Q^U:br#9600:dv=/dev/aleph:pn=:
```

If you are running Ultrix™ on a DecStation you also need to add *pa=none* to the entry above.

(See the file *etc/remote.sample* in this release and the *man* pages for *remote*(5), and *tip*(1) for more information.) You should then be able to type:

```
host% tip aleph
```

in the shell. On System V, you can use *cu* to access the tty port. Initially, the printer will not echo what you type. In order to get the printer to echo (and perform simple line-editing functions), you should carefully enter:

```
host% executive
```

followed by a carriage return. You should get a short message and a `PS>` prompt; this is the interactive PostScript language interpreter. You can then type **`showpage`** followed by a carriage return to get the printer to kick out a (blank) sheet of paper, and so on. To get out of the PostScript language executive, type **`quit`** or **`control-D`**; then type **`~.`** to get out of *tip* or *cu*.

You can also use other programs that communicate over a serial channel such as kermit.

3.4.1 Test Files

The *test* subdirectory includes some sample PostScript language print files, as well as some files in other formats to exercise various TranScript filters. Once you have fully installed the printer and software, you can try out some of these files. See the README file in the *test* directory for more information.

3.4.2 Printer Pragmatics

Each type of PostScript printer has its own special user interface for choosing communications parameters, paper trays and paper handling, printer error reporting, etc. Supplements to the *PostScript Language Reference Manual*,

which present detailed, specific information about PostScript printers, are available from your printer dealer, from the manufacturer, or from Adobe Systems.

Most PostScript printers have some way of letting you know what they are doing. They have flashing lights or LED displays to let you know that the printer is busy processing a job, or idle, or waiting for more input.

3.5 Installing Fonts

3.5.1 Space for Fonts

This section is intended to help you estimate how much disk space and how many hard links a TranScript font installation will consume. There are 13 font families in this release, and four font faces within each family.

troff Fonts

Each *troff* font family takes approximately 20 KB of disk space and nine hard links. For all font families, this is 13*20=260 KB. The font families are built in the directory specified for *BUILDDIR*, then copied into place during installation.

ditroff Fonts

Note that within the Documenter's Workbench *ditroff* is called *troff*. Its installation is a little more complex, since the information for each font can appear both in the main (Times) font and in all the other font family directories. "Font families" are different from "font family directories." Installing a "font family" puts that font in the main *ditroff* font data base, with its unique, two-letter *ditroff* font name. Installing the directory for that font family creates a directory that can be used with the *psroff -F* option to set the default font family for a document. In the *config* file, the *FONTFAMILIES* variable controls which fonts are installed, while the *DITROFFDIRS* environmental variable controls whether font family directories will be created.

Each *ditroff* font family uses approximately 70 KB of disk space: 35 KB for the font information, and 35 KB for the font family directory. The usage formula is:

<Font families>*35 + <Font family directories>*35

For all font families, this is 13*35+13*35=910 KB.

16 hard links (inodes) are used for each font family, and fonts are installed in all font family directories by means of hard links. The usage formula is:

<Font family directories> * <Font families> * 16

For all font families, this is 13*13*16=2704 inodes used.

Again, these font families are built in a directory under *BUILDDIR* then copied into the appropriate directory. However, you may want to keep the build directory around for convenience in installing additional fonts at a later date.

Additional Fonts

You may want to add more fonts after the fonts that are part of the TranScript release have been installed. The TranScript system now includes a method for adding font families.

The first step in adding additional fonts is to make sure there is a *.upr* file describing where all the files associated with the font are. Your font may have come with a *.upr* file; if so, just make sure the *.upr* file is in one of the directories specified in *DEFRESPATH* if you want everyone to be able to see it. If the font is for private use, use the *PSRESOURCEPATH* environment variable to set the appropriate path. The *PSRESOURCEPATH* environment variable should almost always contain "::", which refers to the default path specified in *DEFRESPATH*.

If your font did not come with a *.upr* file, you need to create one. There is a sample *.upr* file in *transcript/lib/afmfiles.upr*, and a description of the *.upr* file format on page 17.

This procedure will make the font available for use by everything except *ptroff* and *psroff*.

3.5.2 Fonts for ptroff

To make the font available for *ptroff*, you must create a map file to map the type faces of the font family to the type faces that *troff* recognizes. An explanation of the format can be found in the *transcript/troff.font/*map* files. After creating a map file, run:

```
host% addtroff.sh familyname mapfilename
```

to build it. *addtroff.sh* takes *familyname* and *mapfilename* as arguments. Now run:

```
host% instltroff.sh familyname
```

Note: instltroff.sh requires an argument here although you used it without any arguments in the initial installation process.

Now *ditroff* must be informed of the presence of the new font families. You must select two-character names for each of the typefaces in the family, and create a file that maps the two-character name to a PostScript language name. This file must be named by appending the suffix *map* to the two-character name. For example, the font family “KrazyKat” could have the two-character name “KK”, and the mapping file name would be *KK.map*.

The typefaces need to be added to each existing font family directory. You add them in the build tree, under the directory specified by *BUILDDIR*. If you haven't retained this directory structure, just add the new family name to the directory specified by *FONTFAMILIES* in *config* and run:

```
host% builddit.sh
```

If you have retained the original build tree directory structure under *BUILDDIR*, run:

```
host% adddit.sh
```

adddit.sh has comments that explain the arguments required. After either of these two steps, run:

```
host% instldit.sh
```

to install everything.

3.6 We’d Like to Hear from You

This section explains the product support available from Adobe Systems. We want to hear from you when any problem or question arises concerning TranScript software. A TranScript customer comment form is available online in *doc/comment.ms*. You can address us at Customer Support (see Report Problems on page 43). In order for us to best handle your concerns, we need the following information from you:

- The name of the person contacting us
- Organization name, address, phone number
- Netmail address (if appropriate)
- TranScript version and distribution type (source or binary)
- PostScript printer manufacturer and model
- Hardware and operating system configuration
- A complete description of the problem with supporting materials (listing, or source media) attached or included wherever possible.

3.6.1 Shipping or Installation Problems

Please contact us immediately if you have one of the following problems:

- Your TranScript software shipment arrived damaged or incomplete.
- You can’t read your TranScript magnetic media.
- Your TranScript software does not compile, install, or test properly.

We will need to verify the order in question so that we may ship a replacement.

3.6.2 Software Problems

Contact us if your TranScript shipment is correct and is properly installed but:

- You suspect some sort of bug in the software.
- TranScript software does something surprising or contrary to the nature of one of the document preparation systems you are using (e.g., *troff*), your operating system, or your expectations.
- You find a serious problem in the documentation or supporting materials.
- You encounter any other difficulty while using TranScript software.

Adobe Systems provides a 90-day warranty on the TranScript product.

3.6.3 TranScript Software Maintenance

Adobe Systems addresses bug reports and questions.

TranScript software is structured such that “work around” solutions are often easy to implement, and many problems can be solved by simply changing a PostScript language prologue or modifying the font databases without access to TranScript software.

3.6.4 New Release

When major enhancements or new functionality is added to the TranScript software, you will be notified that a new version of TranScript software is available.

3.6.5 Adobe's Response to You

We will correct any problems that occurred in shipping the TranScript product to you, and help with problems you may encounter in installation and testing.

We will answer questions on how to install and use TranScript software. Note, we are not experts or wizards on the various document formaters (e.g., *troff* or *plot*) supported by the TranScript system, nor are we necessarily experts on all the different varieties of UNIX systems. The best source for information on the document preparation systems themselves is the appropriate manual. We do want to know of your problems and concerns. We are especially interested in knowing if our documentation fails to meet your needs so we can improve it.

When you encounter a problem and notify us with a Customer Comment Form and supporting materials, we will try to get back to you with solutions as soon as possible. We will provide the most complete information possible: work-around solutions, prologue patches, or simply correction of misunderstandings about PostScript printers or the TranScript software.

We welcome your comments. We are excited about the functionality and freedom that Adobe products bring to the world of electronic printing. Let us know how our products can be improved and how we can better serve you.

chapter 4

Troubleshooting

This chapter provides tips on solving common problems that may arise while you install and run the TranScript package.

4.1 Troubleshooting the Installation

"*I've installed the TranScript system, but nothing prints*".

The first step is to carefully review the installation procedure, especially checking the *config* and *printer* scripts. If everything looks good, and you are confident that the installation was correct, the next step is to check the printer connection and configuration.

Is the connection OK? Is the printer set for an appropriate communication protocol? Do you need a null modem between your computer and your printer? Check the configuration for your printer. The printer should be set for XON/XOFF protocol. The baud rate, parity, number of stop bits, etc. must be correct for printing to work. On BSD systems, check the */etc/printcap* entry for your printer. It should be as follows:

```
:br#9600:rw:fc#0000574:fs#0000003:xc#0:xs#0040040:mx#0:sf:
```

On System V, settings on the printer must match the parameters in the *stty* command in the *mkprinter.sh* script. These parameters specify 9600 baud, 8 data bits, and XON XOFF protocol. You can learn the parity and stop bits settings via the *stty -g* command, which reads the current settings for these values. If you need to change these, see the *stty*(C) *man* page. Before changing the *stty* command in the *mkprinter.sh* script, try experimenting with the settings on your printer. One stop bit and parity disabled is a good combination to try.

Check the host device configuration. *Getty* should be disabled for the tty port that you are using for the printer. On System V, look in */etc/inittab* at the entry for the tty you specified in the command line to *mkprinter.sh*. *getty* should be turned off. For BSD UNIX, look in */etc/ttys* or */etc/ttytable* to be sure the *getty* is turned off for the printer *tty*.

4.2 Problems that Arise After Successful Installation

After a successful installation, and you have been running the TranScript software and printing files with no problems, you may suddenly encounter difficulties. You may have certain files that you can't print, or you may develop post-installation printer problems.

4.2.1 Files That Won't Print

"I have a file that was generated on a Mac and it won't print."

Look at the PostScript language code in the file. It may lack the Apple prologue. You also may need to convert the newline conventions. The newline character in UNIX is ASCII 012. DOS machines use 012 015 to terminate lines. Run the *tr* command as follows to convert the file, where **`file1`** is the DOS file and **`file2`** is a new file:

```
host% tr -d '\015' <file1> file2
```

1. Mac files use 015 instead of 012 so use *tr* as follows:

```
host% tr '\015' '012' <file1> file2
```

"I have a file that was generated on a PC and I can't print it.".

Some PC applications add a CTRL-D (ASCII 004) onto the file. Delete it.

"I'm running Santa Cruz Operations' (SCO) UNIX. I can print from root, but not as a user."

Check the permissions for the following:

PSLIBDIR (defined in *config*)

SPOOLDIR/transcript/${printer}-log (defined in *mkprinter.sh*)

/dev/$printer

/usr/spool/lp/admins/lp/interfaces/$printer

These must be set to allow user access, because SCO UNIX runs the print programs as the user.

4.3 Printer Problems after Installation

Occasionally, the spooler or printer may "hang," that is, stop in such a way that it will not recover by itself.

The first thing to do is check the queue and the last few lines of the printer log file. If you really think it's hung (e.g., the spooler says the printer is busy, but no lights are flashing), try turning the printer off and then on. Recycling is often the only thing necessary to kill off the hung processes and start up printing again. Please wait at least 30 seconds for the software to notice these events before you try something more drastic.

In some circumstances, it may be necessary to disable printing and kill off processes. To do this, take the following steps, assuming a printer named aleph.

4.3.1 On 4.3BSD Systems

1. Make sure you are logged on to the system that is directly connected to the printer, not a remote host.

2. Turn off printing by entering:

```
host% lpc stop aleph
```

3. Determine which processes are still active for this printer. Look at the process id (pid) in the “lock” file (in the printer's spooling directory) and enter:

```
host% ps aux | fgrep daemon
```

   Replace **daemon** with **SPOOLUSER** if it isn't a daemon.

4. Kill the processes with the -9 signal, which they can't ignore.

5. Check the status of the printer now:

```
host% lpc status aleph
```

6. The system should report `no daemon present.`

7. Now you can restart printing with:

```
host% lpc start aleph
```

If this procedures doesn't work,, the printer itself may be hung. Repeat the above steps except, after you kill off the processes and before you do the **start**, turn the printer off and then on. Wait until it has completed self-tests and is fully operational before you check the status. Many printers print a banner page to show they are operational; others have an LCD status display or a green light, which stops blinking and shines steadily when they are fully operational.

Occasionally on 4.3BSD, aborting a currently active (i.e., printing) job with *lprm* or *lpc* will result in the printer daemon dying and not restarting for the next job in the queue. The death of the daemon appears to be a problem in *lpd* (not in the TranScript filters). The fix for this failure is simple, but may take some education of printer users about path names in their environment. The command **`lpc restart aleph`** is available to all users (i.e., it is not a privileged command), and solves this problem. The *lpc* program is often missing from the users' search path, so an absolute path to it must be typed. For example:

```
host% /etc/lpc restart aleph
```

A related bug exists in the 4.2BSD spooler (as received by Adobe) which, on removing the active job, results in the error message:

```
host% /usr/lib/lpd: hostname: unknown printer
lprm: aleph: cannot restart printer daemon
```

If you have 4.2BSD UNIX sources, you can fix this bug with an edit to *rmjob.c* (in */usr/src/usr.lib/lpr*): change the string *startdaemon(host*) to *startdaemon(printer).*

In any case, **`lpc restart aleph`** will restart the printer.

4.3.2 On System V Systems

1. Turn off printing by typing:

```
host% disable -c aleph
```

2. Determine which processes are still active for this printer. Look at the process id (pid) in the "lock" file (in the printer's spooling directory) and enter:

```
host% ps -ef | fgrep lp
```

(or replace *daemon* with *SPOOLUSER* if it isn't *lp*) to help here.

3. Kill the processes with the -9 signal, which they can't ignore.

4. Check the printer status:

```
host% lpstat -t
```

5. Restart printing with:

```
host% enable aleph
```

"*I'm using a DecStation, and my man pages look funny when I print them with ptroff -man.*"

There are several versions of the *man* macros on Ultrix. The default version produces funny-looking *man* pages. We've had success with *ptroff-man.new.*

"*I can print to my printer, but I can't use tip to talk to it.*"

On some systems, the default parity is something other than none. Make sure the entry in */etc/remote* for the device has a *:pa=none:* field.

4.4 Report Problems

If you encounter problems that are not covered in this guide, we would like to hear from you. Please send a description of the problems, with their solutions to:

Customer Support — UNIX
Adobe Systems Incorporated
1585 Charleston Road
P.O. Box 7900
Mountain View, CA 94309-7900

or e-mail to:

techsuppt@adobe.com

4.5 TranScript Customer Comment Form

We can respond best to your problems when you are able to follow these guidelines in reporting:

Limit each Customer Comment Form to one problem or subject.

Try to isolate the problem to a small example — ten-line examples are easier to deal with than 100-line examples.

Include an actual script of the session exhibiting the problem. (Machine generated listings are preferable to hand-typed listings.)

Include a machine-readable form of all relevant materials (please tell us its format).

Use the following form or a facsimile, attach extra sheets if necessary, and mail it to the address above.

TranScript Customer Comment Form

Your name _____

Your Company _____

Your street address _____

City, state, country, ZIP _____

Your phone number _____

Your e-mail address _____

Hardware used _____

Operating system used _____

Version of TranScript (4.0?)_____

Type(s) of PostScript language printer(s) _____
_____

Today's date _____

Appendix A

man Pages

Note: The following pages contain the UNIX man pages for the TranScript system 4.0 release in printed form. They are numbered separately and are not indexed.

Index

T

U

X